

CLAIMS

1. A subsea completion comprising a wellhead (10, 182, 204) from which extends a production fluid conduit (30, 224); the completion comprising a barrier package (82, 190, 5 218) for controlling fluid flows to or from the well, the barrier package being removably located externally of the wellhead and containing at least one production flow control valve; characterised in that a continuation of the production fluid conduit (30, 224) extending away from the wellhead is releasably coupled to the barrier package (82, 194, 218) by a subsea matable connector (34, 84, 216), whereby the barrier package (82, 190, 10 218) and components within the wellhead (10, 182, 204) respectively can be installed and retrieved independently of each other .
2. A subsea completion as defined in claim 1 characterised in that a further conduit (38, 226) extends from the wellhead (10, 204), having one end in communication with a 15 tubing annulus and its other end releasably coupled to the barrier package (82, 218) by a subsea matable connector (34, 84, 216) external to the wellhead.
3. A subsea completion as defined in claim 1 or 2 characterised in that a further conduit (50, 254) extends from the wellhead (10, 204), having one end communicating 20 with a region above a tubing hanger received within the wellhead, and its other end releasably coupled to the barrier package (82, 218) by a subsea matable connector (34, 84, 216) external to the wellhead.
4. A subsea completion as defined in claim 2 or 3 characterised in that the connectors 25 (34, 84, 216) are combined to form a unitary hub connector.
5. A subsea completion as defined in any of claims 1-4 characterised in that a tubing hanger (22) containing an annulus flow passage (42) is connected to the tubing annulus conduit and the annulus flow passage contains a flow control valve (66,68).

6. A subsea completion as defined in claim 2 and any of claims 1-4, characterised in that a flow control valve (80) is positioned in the tubing annulus conduit.

7. A subsea completion as defined in any of claims 1-6, characterised in that the completion comprises a tubing hanger (22) containing a flow control valve (66) positioned in a production fluid flow passage connected to a tubing string (20).

8. A subsea completion as defined in any of claims 1-6, characterised in that a flow control valve (78) is positioned in the production fluid conduit (30).

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9. A subsea completion as defined in any of claims 1-8, characterised in that the wellhead (10) comprises a valveless flow spool (72) connected to a separate lower wellhead part (74) and containing a tubing hanger (22).

15 10. A subsea completion as defined in any of claims 1-9 characterised in that the barrier package (82, 190, 218) contains one or more valves of equivalent function to a production wing valve, annulus wing valve, annulus valve or crossover valve.

11. A subsea completion as defined in any of claims 1-10 characterised in that the barrier package (82, 190, 218) contains a production choke (116, 253).

12. A subsea completion as defined in claim 11 characterised in that the production choke (253) is releasably connected to the barrier package (218).

25 13. A subsea completion as defined in any of claims 1-12 characterised in that the barrier package (190, 218) is supported on a well template (184, 200, 300).

14. A subsea completion as defined in claim 13 characterised in that the wellhead is rigidly connected to the template.

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15. A subsea completion as defined in claim 13 or 14 characterised in that the subsea matable connector (216) is integrated into the template (200, 300).
16. A subsea completion as defined in any of claims 17-19 characterised in that the production fluid conduit (224, 226) is structurally integrated into the template (200, 300).
17. A subsea completion as defined in any of claims 17-21 characterised in that the template (300) supports more than one barrier package (218d, 218e).
- 10 18. A subsea completion as defined in any of claims 13-17 characterised in that the template supports a separation module.
19. A subsea completion as defined in any of claims 1-12 characterised in that the barrier package (190) is supported on a manifold (188).
- 15 20. A subsea drilling and production system, comprising a framework (184, 202, 300), a well housing (182, 204) and a barrier package (190, 218) removably located externally of the well housing and containing at least one production flow control valve, characterised in that the barrier package (190, 218) is located on the framework (184, 202, 20 300) and that the well housing is permanently and rigidly connected to form a part of the framework.
21. A subsea drilling and production system comprising a many-sided framework (300) comprising structural members arranged to support well barrier packages and/or 25 processing modules (218), characterised in that well housings (204a, 204b, 204c, 204d) are located in the corners of the framework and are permanently and rigidly connected to the structural members so as to form a part of the framework.
22. A subsea drilling and production system as defined in claim 21 characterised in 30 that the structural members are arranged in a regular pattern.

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23. A subsea drilling and production system as defined claim 20 or 21, characterised in that the framework is arranged to form a polygon having three or more sides.

24. A subsea drilling and production system as defined in any of claims 20-23
5 characterised in that the framework (300) includes a plurality of connecting locations
(216) for the barrier packages or modules (where present) (218) and all modules/packages
and connecting locations have a common connecting interface such that
modules/packages (218) can be exchanged with each other and secured at any connecting
location on the framework.

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25. A system as defined in any of claims 20-24 characterised in that a fluid conducting
pipe comprises a structural part of the framework (300).

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